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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,656	02/28/2002	Gart-Jan Heerens	P 290724 P-0241.010-US	2502

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EXAMINER	
MOHAMEDULLA, SALEHA R	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,656	HEERENS ET AL.	
	Examiner	Art Unit	
	Saleha R. Mohamedulla	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *6-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 22-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-25* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6 and 2/12/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-25 are pending. Claims 1-5 and 22-25 are examined. Claims 6-21 are withdrawn from consideration, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Election/Restriction

1. The traverse of the restriction requirement in the remarks of the amendment has been carefully considered by the Examiner but is not deemed to be persuasive for the reasons of record as set forth in paragraphs 1-12 of the last Office action in combination with the following remarks.

2. The inventions as claimed are clearly distinct and capable of supporting separate patents within the meaning of 35 U.S.C. 121. The inventions need not be independent in order to have a proper restriction requirement (see M.P.E.P. 802.01). One-way distinctness is all that is necessary in a restriction between inventions which are related as a process and apparatus for its practice (see M.P.E.P. 806.05(e)), as a product and process of use (see M.P.E.P. 806.05(h)), or inventions that are unrelated (see M.P.E.P. 806.04, M.P.E.P. 808.01). Clearly to examine all process, apparatus and product claims would require a divergent field of search and consideration of process embodiments for apparatus inventions, apparatus embodiments for process inventions, process embodiments for product inventions, product embodiments for process inventions, and a consideration between product and apparatus embodiments, clearly requiring an undue burdensome search and examination.

3. The argument made by the Applicant stating the action doesn't link Group I or Group II to a product or process of use is in error since paragraph 1 of the last office action clearly states

that Group II is drawn to a mask (product) and Group II is drawn to a method of handling (using) a mask (product). In addition, Applicant argues that an exposure process is not different than a mask handling process because mask handling processes are used in exposure processes. However, an exposure process is not claimed in Group I. Therefore, Group I is not an exposure process group. Applicant argues that Group IV includes an exposure process, however, Group I and Group IV are different for at least the reason that Group I does not include an exposure process. Therefore, Applicant's comments are not persuasive.

Therefore, the restriction requirement is still proper and made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 22, 23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by EP# 0881538 to Kawahashi.

The invention relates to a means for supporting a mask holding frame for suction and attachment of a mask which is used for an exposure device (col. 1, lines 1-10). Therefore, Kawahashi teaches handling a mask. Kawahashi teaches means for supporting a mask holding frame which has a rectangular mask holding frame for attachment of a mask and a supporting component to support the mask holding frame (col. 3, lines 30-36). The invention includes, in

three of four corners of the mask holding frame, three support axes which can each be moved in a direction which orthogonally intersects the surface of the mask holding frame (col. 3, lines 39-43). Therefore, Kawahashi teaches holding the mask such that the mask is self-aligning. At points opposite the axes are three V-groove bodies. In the vicinity of the support axes there is a through opening. The through openings are penetrated by mounting pins, one end of the respective mounting pin being installed in a screw opening which is located in the supporting component (col. 3, lines 43-55). The mask holding frame also includes elastic components for pre-stressing the frame towards the side opposite the supporting component. In at least three corner areas there are protrusions that can be provided with the support axes (col. 4, lines 5-15). Also, the corner area with the protrusion or elastic component, there is a position control component by which position control is done so that the corner area of the frame does not move when the mask holding frame is exposed to a compressive force (col. 4, lines 20-30). Therefore, Kawahashi teaches that the holding includes cooperation between a first set of connecting structures on the mask and a second set of connecting structures on the gripper. Figure 1 shows that the contact area is minimized. The first set and second set comprise projections and recesses. All four corners of the frame and supporting structure are accounted for, therefore, the degrees of freedom of the frame and support structure are the same. Figure 1 also shows that the structure is moved into position with the mask holding frame. Kawahashi also teaches that the large mask holding frame is prevented from tilting or bending because of the support elastic and screws in the four corner areas. Kawahashi teaches that the screw down force does not need to be increased (col. 4, lines 37-45). Therefore, the support structure and the holding frame do not need to be touching since the screws do not need to be driven in all the way. Therefore,

Kawahashi teaches holding the mask by a non-contact force, that is, gravity will keep the frame and structure apart at a distance of the length of the screw that is not driven in all the way.

5. Claims 1-5 and 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by EP# 0789280 to Chiba et al.

Chiba teaches a holding apparatus for holding a mask without using a magnet or vacuum chuck in an exposure apparatus (col. 1, lines 1-5). Chiba teaches a kinematic mount system by which the mask is clamped by 3 clamp forces acting on the mask (col. 1, lines 45-50). Chiba teaches using three pieces of balls and the mask is clamped between the ball members and clamps. The mask includes grooves into which the ball members fit. The first ball engages into a conic groove and then the second ball engages into another groove (col. 1, line 50 – col. 2, line 10). Therefore, Chiba teaches moving the mask gripper into position and that the mask is self-aligning. Because Chiba teaches the use of magnet in the prior art, Chiba teaches an electromagnetic force. Also, Chiba teaches only 3 pieces of balls to hold the mask. Therefore, the holding apparatus and mask are not completely touching. Therefore, Chiba teaches holding the mask by a non-contact force, that is, gravity. Because the mask is held stably, the degrees of freedom of the mask and holding apparatus are the same. Also, because only 3 ball members are used, contact is minimized.

6. Claims 1-5 and 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by US# 6172738 to Korenaga et al.

Korenaga teaches a holding mechanism for holding the reticle on a reticle stage in an exposure apparatus during the reticle scan movement, said holding mechanism including a first mechanism for confining an end edge portion of the reticle and a second mechanism for pressing the reticle from above (col. 2, lines 35-40). Korenaga also teaches holding the reticle by using three Z clamps (attracting means) 10 for attracting the bottom face of the reticle, an X clamp (second attracting means) 20 for attracting an X-axis end edge portion of the reticle, and a pair of Y clamps (second attracting means) 30 for attracting a Y-axis (scan direction) end edge portion of the reticle. The reticle on the reticle stage 3 can be positioned with respect to the Z clamps 10, X clamp 20 and Y clamps 30, by means of, as best seen in FIGS. 2 and 3, three Z reference balls 40 engageable with the bottom face of the reticle, an X reference ball (confining means or reference ball) 50 engageable with the end edge portion of the reticle R.sub.1 in the X-axis direction, and a pair of Y reference balls (confining means or reference balls) 60 engageable with the end edge portion of the reticle R.sub.1 in the Y-axis direction. Each Z clamp 10 includes a main block 11 (see FIG. 4) fixedly secured to the bottom face of the reticle stage 3 by use of screws, for example, an evacuation nipple 12 (see FIG. 1) connected from the side face of the block into its inside piping, and a pair of welded bellows 13 projecting from the main block 11 upwardly (Z-axis direction). These welded bellows 13 are communicated with the inside piping of the main block 11 (col. 4,lines 40-60). The reticle is attracted to the sealing members 14, whereby a vacuum attraction force for urging (attracting) the reticle R.sub.1 to the Z reference balls 40 is produced. The Z clamps 10 serve so that the welded bellows 13 enter

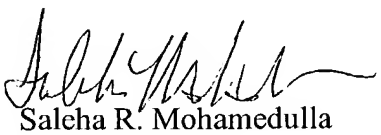
three pairs of U-shaped grooves 3b, respectively, formed at three peripheral edges of the window 3a of the reticle stage 3, respectively, and they project above the top face of the reticle stage 3, and that the sealing members 14 at the open ends of the welded bellows 13 are opposed to the bottom face of the peripheral portion of the reticle. Protrusion 3c formed between each pair of U-shaped grooves 3b supports a magnet holder 41 which serves to hold the Z reference ball 40 rotatably and also stably at a constant position. Each magnet holder 41 includes, as shown in FIGS. 8A and 8B, a non-magnetic block 41a having a cross shape in section, and four rod-like magnets 41b held at four corners of the block. The non-magnetic block 41a is mounted on the protrusion 3c at the window 3a of the reticle stage 3, through a magnetic plate 41c. The four rod-like magnets 4b serve as a four-pole magnet, and they are so arranged that the overall potential, which is provided by the magnetic circuit passing the Z reference ball, made of a magnetic material, and the magnetic circuit passing the magnetic plate 41c, is most stabilized when the Z reference ball 40 is placed at the center of the non-magnetic block 41a (col. 5, lines 1-25). Therefore, Korenaga teaches handling and holding a self-aligned mask where the holding comprises cooperation between a first set of recesses on the mask and a complementary second set of protrusions on the holder. Korenaga teaches magnetic force through use of the magnetic and since the mask does not completely touch the holder, Korenaga also teaches that the mask is held by gravity (see Figure 4). Korenaga also teaches sliding the balls into position, therefore, Korenaga teaches moving the gripper into position. Because the mask is held stably, the degrees of freedom of the mask and holding apparatus are the same. The ball-groove system is a kinematic system.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Saleha Mohamedulla whose telephone number is (571) 272-1387. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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February 22, 2004